

WHAT IS CLAIMED IS:

1 1. A method for searching for an entry in a plurality of entries in a data
2 structure, the method comprising:
3 determining an entry point for the data structure;
4 determining a first entry in the plurality of entries corresponding to the entry
5 point;
6 determining if the first entry corresponds to a key used to determine the entry
7 point;
8 if the first entry does not correspond to the key, using information in the first
9 entry to determine a second entry in the data structure for the key; and
10 if the first entry corresponds to the key, performing an action associated with
11 the first entry.

1 2. The method of claim 1, further comprising:
2 determining if the second entry corresponds to the key; and
3 if the second entry does not correspond to the key, using information in the
4 second entry to determine a third entry in the data structure.

1 3. The method of claim 1, wherein the first entry comprises a plurality of
2 branches, wherein the information is used to determine which branch to search in for the
3 second entry.

1 4. The method of claim 3, wherein the plurality of branches comprise
2 three or more branches.

1 5. The method of claim 1, wherein the entry point is a hash result of the
2 key and the entry comprises an entry key, the entry key used to determine if the entry
3 corresponds to the key by comparing the entry key to the key to determine if the entry key
4 matches the key.

1 6. The method of claim 1, wherein the information comprises a plurality
2 of hints, wherein a hint in the plurality of hints corresponds to information associated with the
3 key.

1 7. The method of claim 6, wherein the plurality of hints comprise pointers
2 to entries in the data structure, wherein the hint comprises a pointer to the second entry.

1 8. The method of claim 6, wherein each hint is associated with a branch
2 in a plurality of branches associated with the first entry.

1 9. The method of claim 1, wherein performing the action comprises at
2 least one of retrieving information from the first entry, updating information in the first entry,
3 and deleting information in the first entry.

1 10. The method of claim 1, wherein the data structure comprises a linked
2 list, wherein the first entry is a parent node and the second entry is a child node to the first
3 entry in the data structure.

1 11. The method of claim 1, wherein determining the entry point comprises:
2 determining a hash result for the key; and
3 using the hash result to determine the first entry corresponding to the entry
4 point.

1 12. A method for searching a data structure, the method comprising:
2 hashing a search key to generate a hash result;
3 determining a first entry in a plurality of entries in the data structure using the
4 hash result;
5 determining if the first entry corresponds to the search key;
6 if the first entry does not correspond to the search key, using information in
7 the first entry to determine a second entry in the data structure, the second entry included in a
8 branch one or more branches associated with the first entry; and
9 if the first entry does correspond to the search key, performing an action
10 associated with the first entry.

1 13. The method of claim 12, further comprising:
2 determining if the second entry corresponds to the search key; and
3 if the second entry does not correspond to the search key, using information in
4 the second entry to determine a third entry in the data structure, the third entry included in
5 one or more branches associated with the second entry.

1 14. The method of claim 13, further comprising if the second entry does
2 correspond to the search key, performing an action associated with the second entry.

1 15. The method of claim 13, wherein using the information in the first
2 entry to determine the second entry comprises comparing the information in the first entry to
3 at least a first part of the search key to determine if the information in the first entry matches
4 the at least the first part of the search key.

1 16. The method of claim 15, wherein using the information in the second
2 entry to determine the third entry comprises comparing the information in the second entry to
3 at least a second part of the search key to determine if the information in the second entry
4 matches the at least the second part of the search key, the at least the second part of the search
5 key being different than the at least a first part of the search key.

1 17. The method of claim 12, wherein determining if the first entry
2 corresponds to the search key comprises comparing an entry key in the entry to the search
3 key to determine if the first entry matches to the search key.

1 18. The method of claim 12, wherein the information is used to determine
2 which branch in the one or more branches associated with the first entry to search in for the
3 second entry.

1 19. The method of claim 12, wherein performing the action comprises at
2 least one of retrieving information from the first entry, updating information in the first entry,
3 and deleting information in the first entry.

1 20. The method of claim 12, wherein the information comprises a plurality
2 of hints, wherein a hint in the plurality of hints corresponds to information associated with the
3 search key and points to the second entry.

1 21. The method of claim 20, wherein each hint is associated with a branch
2 in the one or more branches associated with the first entry.

1 22. The method of claim 12, wherein the data structure comprises a linked
2 list, wherein the first entry is a parent node and the second entry is a child node to the first
3 entry in the data structure.

1 23. A method for searching a data structure, the method comprising:
2 (a) hashing a search key to generate a hash result;
3 (b) determining an entry in a plurality of entries in the data structure using the
4 hash result;
5 (c) determining if an entry key in the entry corresponds to the search key;
6 (d) if the entry key does not correspond to the search key, repeating step (c)
7 using a subsequent entry until the entry key from the subsequent entry corresponds to the
8 search key, wherein the subsequent entry is determined using information in the entry; and
9 (e) if the entry key does correspond to the search key, performing an action
10 associated with the entry.

1 24. The method of claim 23, wherein the subsequent entry is determined
2 by comparing information in the search key to information in the entry to determine if the
3 information in the search key matches the information in the entry.

1 25. The method of claim 23, wherein as step (c) is repeated using a first
2 subsequent entry and a second subsequent entry, different information in the search key is
3 used to determine the second subsequent entry than was used in determining the first
4 subsequent entry.

1 26. The method of claim 23, wherein the data structure comprises a linked
2 list, wherein the entry comprises a parent node and the subsequent entry comprises a child
3 node in the linked list.

1 27. The method of claim 23, wherein performing the action comprises at
2 least one of retrieving information from the first entry, updating information in the first entry,
3 and deleting information in the first entry.

1 28. The method of claim 23, wherein the information comprises a plurality
2 of hints, wherein a hint in the plurality of hints corresponds to information associated with the
3 key and points to the subsequent entry.

1 29. The method of claim 28, wherein each hint is associated with a branch
2 in one or more branches associated with the entry.

1 30. A method for searching for an entry in a plurality of entries in a data
2 structure, the method comprising:
3 receiving a data frame from a storage network;
4 determining a search key for the data structure using information in the data
5 frame;
6 hashing the search key to generate a hash result;
7 determining a first entry in the plurality of entries corresponding to the hash
8 result;
9 determining if the first entry corresponds to the search key;
10 if the first entry does not correspond to the search key, using information in
11 the first entry to determine a second entry in the data structure; and
12 if the first entry corresponds to the search key, retrieving an address for a
13 storage device found in the first entry.

1 31. The method of claim 30, further comprising:
2 determining if the second entry corresponds to the search key; and
3 if the second entry does not correspond to the key, using information in the
4 second entry to determine a third entry in the data structure, the third entry included in one or
5 more branches associated with the second entry.

1 32. The method of claim 31, further comprising writing the address to the
2 data frame, wherein the address is used to perform an action with the storage device at the
3 address.

1 33. The method of claim 32, wherein the action comprising at least one of
2 writing, erasing, and updating information at the address in the storage device using
3 information in the data frame.